



Building a Skilled and Inclusive Society through Educational Technology in Nigeria

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Abstract

This article explores how Educational Technology (EdTech) can serve as a transformative catalyst for building a skilled and inclusive society in Nigeria. Drawing from national education and digital policies, it examines the intersection of technology, skills development, and social inclusion within the Nigerian context. Using a desk-based qualitative and quantitative mixed-method approach, the study synthesizes insights from policy frameworks, EdTech initiatives, and global best practices. Findings show that while Nigeria has taken major steps through the National Digital Learning Policy (2023), the National Digital Economy Policy and Strategy (2020–2030), and other frameworks, challenges remain in access, affordability, infrastructure, and teacher preparedness. The article recommends data-driven policymaking, teacher professional development, inclusive content design, and enhanced public–private partnerships to accelerate progress toward Sustainable Development Goal 4 (Quality Education) and 8 (Decent Work and Economic Growth).

Keywords: Digital Divide, Digital Literacy, Educational Technology, Inclusive Education, Inclusive Society, Infrastructure, Nigeria.

Introduction

Rapid population growth, youthful demographic profile, and technological diffusion create both an opportunity and an imperative to equip millions of young people with the skills they need to thrive in a digital economy while ensuring education is inclusive and equitable. Educational Technology (EdTech) — defined broadly as digital tools, platforms, and pedagogical approaches that support teaching, learning, and skill formation — is widely viewed as a high-leverage avenue to accelerate learning outcomes and expand access, particularly for marginalized learners. National policy developments and multiple large-scale initiatives in recent years underscore the country's interest in leveraging digital learning, but gaps in infrastructure, cost, teacher capacity, and inclusion persist.

Nigeria faces persistent challenges in access to entrepreneurial skills, even with over 10.5 million out-of-school children (UNICEF, 2023). Building a skilled and inclusive society

requires leveraging technology to make education accessible to all, including marginalized populations. Educational Technology encompasses digital tools and platforms that facilitate teaching, learning, and skill acquisition through ICT.

Recent innovations such as uLesson, Eneza Education, and AltSchool Africa demonstrate Nigeria's growing Educational Technology potential (uLesson, 2024). Combined with national policies like the National Digital Learning Policy (2023) and the National Policy on Inclusive Education (2023), these efforts mark a significant step toward educational transformation.

Despite large public investments, Nigeria faces persistent disparities in access to quality education. UNICEF (2023) estimates that more than 10.5 million children remain out of school, disproportionately concentrated in northern and rural communities. These figures reveal not only a learning crisis but also a skills deficit threatening economic competitiveness and social stability.

Educational Technology solutions, ranging from mobile learning apps to learning management systems, offer scalable pathways to extend education to underserved populations. Innovations such as uLesson, Eneza Education, AltSchool Africa, and Edves illustrate the growing capacity of Nigeria's Educational Technology ecosystem to bridge learning gaps (uLesson, 2024). Yet, to ensure inclusivity and sustainability, digital learning must be aligned with coherent policy frameworks, infrastructure expansion, and teacher readiness.

Conceptual and Theoretical Framework

Educational Technology operates at the intersection of pedagogy, digital infrastructure, and social inclusion. Two major theoretical perspectives underpin this study — Vygotsky's Social Constructivist Theory (1978) and Human Capital Theory (Schultz, 1961; Becker, 1964).

Vygotsky's Social Constructivism

Lev Vygotsky posited that learning is socially mediated and occurs through interaction with more knowledgeable others. Within Educational Technology environments, collaborative platforms such as virtual classrooms and discussion forums allow learners to co-construct knowledge, thereby fostering deeper understanding. Tools like Google Classroom, Moodle, and Microsoft Teams enable active participation, reflecting Vygotsky's "Zone of Proximal Development" (ZPD), where learners advance through guided digital interaction (Vygotsky, 1978).

Human Capital Theory

The Human Capital framework (Schultz, 1961; Becker, 1964) links education directly to productivity and economic growth. Investing in Educational Technology enhances individuals' skills, creativity, and employability — key determinants of national development. By equipping Nigerian youths with digital competencies, the country increases its capacity to compete in the global digital economy.

Together, these theories highlight that Educational Technology is not merely a technological tool but a developmental mechanism that builds both human capacity and social cohesion.

Methodology

This research employed a desk-based mixed-method design, integrating qualitative and quantitative secondary data.

Data Sources

Qualitative data — national policy documents (e.g., National Digital Learning Policy 2023; National Policy on Inclusive Education 2017; ICT in Education Policy 2019).

Quantitative data — statistics from the World Bank (2025), UNICEF (2023), and NBS (2024) on literacy rates, digital access, and youth unemployment.

Case studies include Educational Technology providers such as uLesson, AltSchool Africa, Bridge Nigeria, and Eneza Education.

Analysis

Policy documents were reviewed thematically for inclusion strategies, digital learning goals, and skills frameworks, while statistical data were used to interpret patterns of access and equity. This triangulation provided a comprehensive understanding of how Educational Technology supports Nigeria's inclusive education and skills agenda.

Nigeria's Educational Landscape

Nigeria's education system is characterized by uneven quality, underfunding, and regional disparity. According to the World Bank (2025), learning poverty remains above 70 per cent, meaning most 10-year-olds cannot read or understand a simple text. Moreover, only about 40 per cent of secondary schools have functional computer labs (UBEC, 2024).

The rapid growth of private Educational Technology start-ups reflects an opportunity to fill systemic gaps. Initiatives such as Bridge Nigeria, which operates low-cost digital classrooms

in underserved areas, and the UNICEF Learning Passport, an offline-capable platform for out-of-school learners, highlight innovative responses to Nigeria's education challenges.

The Role of Educational Technology in Skill Development

Digital Skills Training

Digital literacy Programs such as Google Digital Skills for Africa, Microsoft Future Ready Initiative, and ALX Africa have trained thousands of young Nigerians in coding, digital marketing, and entrepreneurship (Google, 2024). These initiatives align with the National Digital Economy Policy (2020–2030) to expand the country's digital workforce.

Vocational and Technical Learning

Platforms like AltSchool Africa and uLesson Career Labs bridge the gap between academic education and employability by offering micro-credentials and job-aligned courses. Similarly, the National Open University of Nigeria (NOUN) integrates online TVET modules to promote flexible lifelong learning.

Teacher Capacity Building

The Federal Ministry of Education's Digital Learning Policy (2023) mandates ICT integration in teacher training institutions. Through blended courses, teachers acquire competence in online pedagogy, assistive technology, and digital assessment.

Policy Frameworks Supporting Digital and Inclusive Learning

National Digital Economy Policy and Strategy (NDEPS, 2020–2030)

NDEPS identifies "Digital Literacy and Skills" as one of its eight pillars. It promotes large-scale training programs, youth innovation hubs, and inter-ministerial coordination to strengthen Nigeria's digital economy (Federal Ministry of Communications, 2020).

National Policy on Inclusive Education (2017)

This policy affirms the right to education for all learners regardless of disability, socio-economic background, or location. It calls for assistive technology, teacher training, and school-community partnerships to eliminate exclusion (FME, 2017).

National Policy on ICT in Education (2019)

The ICT Policy emphasizes infrastructure, local content development, e-assessment, and ICT integration in teacher education. It seeks to mainstream technology into all levels of the education system (FME, 2019).

National Digital Learning Policy (2023)

This framework envisions an inclusive digital ecosystem that integrates formal and informal learning through open platforms and digital credentials (FME, 2023).

Relevance of Policies to Youth Skills Development

NDEPS (2020–2030): Fosters employability by embedding digital competencies across education and entrepreneurship programs. By prioritizing digital literacy and advanced ICT skills, NDEPS creates a top-level demand signal and coordinates investments that expand opportunities for youth to learn market-relevant skills (software, data, digital marketing, fintech). This increases employability and entrepreneurship potential.

National Policy on Inclusive Education (2017): Expands equitable skills access for marginalized youth, reducing exclusion. It removes barriers for vulnerable youth, providing equitable skills access. This expands the talent pool and promotes social inclusion

ICT in Education Policy (2019): Produces digitally capable teachers and curricula aligned to 21st-century skills that promote youth skills development, ensuring interoperability, inclusion, and quality assurance in digital learning systems.

National Digital Learning Policy (2023)

Provides a coherent roadmap for advancing youth skills development within a digital economy. The policy focuses on identity/access management and interoperable platforms, which makes it easier to scale recognized digital courses and micro-credentials for youth, providing a platform for developing employable skills.

By setting standards for content quality, learner protection and inclusion, the policy reduces the risks of low-quality online training and makes digital learning viable for remote/marginalized youth.

Practical Implications of the Policies.

What this means for policymakers, trainers and youth.

Policymakers use the policy to design coordinated programs. They can pair broadband and infrastructure investments (NDEPS) with school/TVET digital content (Digital Learning + ICT policy) and targeted outreach for marginalized youth inclusive education.

Training providers / Edtechs can align courses to national standards, seek interoperability with national IDs and credential systems, and build accessible content to reach more youth.

Youth / civil society organizations can demand transparent recognition of skills and participate in public consultations for the sake of implementation (especially at the state level where delivery happens).

Educational Technology and Inclusivity

The National Policy on Inclusive Education (2023) prioritizes accessible learning for students with disabilities and those in remote areas. The use of assistive technologies such as screen readers, captioned videos, and voice-activated devices enables learners with disabilities to participate effectively. During the COVID-19 pandemic, Nigeria leveraged radio and television learning programs, extending access to remote communities (UNICEF, 2021).

Projects like the Digital Schools Initiative in collaboration with UNICEF and Microsoft demonstrate how adaptive learning systems can support inclusive education. Localized apps such as Ubongo Kids and Kolibri provide multilingual, culturally relevant learning materials for diverse learners.

Challenges Hindering Educational Technology Integration in Nigeria.

Building an inclusive society through educational technology in Nigeria faces several challenges, including:

Infrastructure Challenges

1. Limited access to technology: Many communities lack access to devices, internet connectivity, and electricity.
2. Poor infrastructure: Inadequate infrastructure, such as unreliable internet connectivity, hinders EdTech adoption.

Social Challenges

1. Digital divide: Disparities in access to technology and digital literacy create unequal opportunities. Rural–urban disparities persist due to inadequate infrastructure, lack of internet connectivity and unreliable electricity.
2. Cultural and linguistic barriers: Educational Technology solutions may not be able to cater for diverse cultural and linguistic needs.
3. Socio-economic disparities: Economic and social inequalities affect access to quality education and technology.

Pedagogical Challenges

1. Teacher training: Many educators lack digital competencies. Educators need training to effectively integrate Educational Technology into their practice.
2. Lack of Relevant Content: Educational Technology content must be relevant, culturally sensitive, and aligned with curriculum standards. Educational content that is not tailored to the needs of diverse learners can hinder inclusive education.
3. Assessment and Evaluation: Assessing the effectiveness of Educational Technology solutions may be too complex.

Policy and Regulatory Challenges

1. Policy framework: Inadequate policies and regulations hinder Educational Technology adoption and innovation. Poor Implementation of policy, Weak monitoring frameworks and duplication of efforts also pose some challenges
2. Funding and investment: Insufficient funding and investment limit educational technology development and implementation.
3. Data protection and privacy: Ensuring data protection and privacy in educational technology is very crucial.

Other Challenges

1. Sustainability: Ensuring the long-term sustainability of EdTech initiatives can be difficult.
2. Community engagement: Engaging local communities in EdTech development and implementation is essential.
3. Monitoring and evaluation: Continuous monitoring and evaluation of EdTech initiatives are necessary to ensure effectiveness.

Strategic Recommendations

Promote Digital Access and Infrastructure

Expand broadband to rural schools via Public–private partnerships (PPPs).

Provide low-cost devices through social innovation funds.

Establish community ICT centers and public Wi-Fi hubs.

Develop Digital Literacy and 21st-Century Skills

Embed digital literacy across curricula.

Encourage coding, data science, and problem-solving courses.

Partner with the private sector for internships and mentorship.

Strengthen Inclusive Education through EdTech

Scale assistive technologies and inclusive content design.

Translate e-learning materials into indigenous languages.

Promote gender-responsive Science, Technology, Engineering, and Mathematics (STEM) participation.

Foster Teacher Professional Development

Institutionalize continuous ICT training via open courses.

Encourage teachers to design local digital content Open Educational Resources (OER).

Establish online communities of practice for collaboration.

Integrate Skills-Based and Vocational Learning

Link EdTech to Technical and Vocational Education and Training (TVET) curricula.

Promote nano-learning for short, market-relevant certifications.

Utilize platforms like Coursera and Udemy for blended vocational training.

Data-Driven Policy and Governance

Develop education data dashboards to monitor equity outcomes.

Involve civil society and youth in digital policy consultations.

Encourage Local Innovation and Content Creation

Support Nigerian Educational Technology start-ups through incubation grants.

Incentivize creation of culturally contextualized content.

Integrate universities and innovation hubs into national EdTech networks.

Solutions and Recommendations to Challenges of Building an Inclusive Society through Educational Technology.

Infrastructural Development

Expansion of Connectivity

Government and private telecom companies should collaborate to extend affordable broadband and mobile internet access to rural and underserved areas through initiatives such as the National Broadband Plan (2020–2025).

Investment in Power Supply

Deploy renewable energy solutions (e.g., solar-powered ICT hubs) in schools, especially in off-grid rural communities, to ensure continuous access to EdTech resources.

Providing Affordable Devices

Promote local production or government-subsidized distribution of digital devices (tablets, laptops) for learners and teachers.

Teacher Training and Capacity Building

Digital Pedagogy Training

Integrate ICT and inclusive education modules into Teacher Education Programmes and in-service training, aligning with Nigeria's National ICT in Education Policy (2019).

Continuous Professional Development (CPD)

Establish nationwide CPD platforms (e.g., online courses, webinars, micro-credentials) to help teachers adapt to emerging EdTech tools and inclusive strategies.

Peer Learning Communities

Encourage Communities of Practice where teachers can share best practices on inclusive digital teaching methods.

Bridging the Digital Divide

Public–Private Partnerships (PPP)

Foster partnerships with tech companies (e.g., MTN Foundation, Airtel, Google for Education) to provide subsidized internet and digital literacy training.

Community Learning Centres

Create Digital Inclusion Hubs in rural communities where learners can access EdTech tools regardless of personal device ownership.

Digital Literacy Campaigns

Launch nationwide awareness and training programs for parents, learners, and community leaders to promote equitable digital inclusion.

Curriculum and Content Development

Localized Content

Develop culturally relevant and multilingual digital content reflecting Nigeria's diverse linguistic and cultural backgrounds.

Inclusive Design

Ensure Educational Technology tools are designed to accommodate learners with disabilities — including screen readers, captions, and text-to-speech functions.

Alignment with Curriculum: Align digital learning materials with the Nigerian Educational Research and Development Council (NERDC) curriculum to ensure consistency and quality.

Policy and Governance Framework

Strengthen Policy Implementation: Enforce and coordinate policies like the National Policy on Inclusive Education (2017) and National Digital Economy Policy and Strategy (2020–2030) to avoid overlap and fragmentation.

Monitoring and Evaluation

Develop an Educational Technology Quality Assurance Framework to regularly evaluate inclusivity, effectiveness, and equity of digital initiatives.

Institutional Coordination: Strengthen inter-ministerial collaboration (between Ministries of Education, Communications, and Women Affairs) for unified implementation of inclusive Educational Technology policies.

Funding and Sustainability

Innovative Financing Models: Encourage public–private funding partnerships, corporate social responsibility (CSR) programs, and donor support (e.g., UNESCO, UNICEF, World Bank).

Budget Allocation

Increase the percentage of the national education budget dedicated to digital infrastructure and inclusive learning technologies.

Local Innovation Support

Provide grants and tax incentives for Nigerian Educational Technology startups creating inclusive learning solutions.

Data Protection and Privacy

Develop Educational Technology Data Regulations

Implement a clear Data Protection Framework for schools and Educational Technology providers to protect learners' personal data.

Cybersecurity Awareness

Train educators and administrators on safe digital practices and ethical handling of learners' information.

Compliance Monitoring

Enforce compliance with the Nigeria Data Protection Act (2023) in all EdTech platforms used in schools.

Disability Inclusion

Universal Design for Learning (UDL)

Promote UDL principles in the development of all educational technologies to support learners with varying abilities.

Assistive Technologies

Provide screen readers, braille-compatible devices, and sign-language integration in online learning platforms.

Teacher Support

Equip teachers with skills to adapt digital tools for students with visual, auditory, and cognitive impairments.

Cultural and Social Inclusion

Community Engagement

Involve traditional, religious, and community leaders in EdTech sensitization to overcome cultural resistance.

Gender-Inclusive Programs

Encourage programs like Girls in ICT and She Code Africa to address gender gaps in digital education.

Local Language Integration

Translate learning platforms and resources into major Nigerian languages to ensure accessibility.

Monitoring, Evaluation, and Research

Establish continuous monitoring systems to assess the impact of educational technology on inclusivity and learning outcomes.

Data-Driven Decision Making

Use data analytics from schools and platforms to improve EdTech interventions and policy direction.

Academic-Industry Collaboration

Encourage universities to partner with EdTech firms for research, testing, and scaling of inclusive innovations.

Comparative Lessons from Other African Countries

Kenya: The government's Digital Learning Programme distributed tablets to primary pupils and integrated coding into curricula (World Bank, 2024).

Ghana: Public-private partnerships have created mobile learning hubs and low-data e-learning platforms, a model Nigeria can adapt.

These experiences reveal that political commitment, broadband investment, and digital inclusion policies are critical for success.

Policy Implications

Government: Should prioritize EdTech within national development plans and expand the Universal Service Provision Fund (USPF) for school connectivity.

Private Sector: Needs to align innovation with inclusive education objectives.

Civil Society: Must advocate for equitable digital access and accountability in implementation.

Conclusion

Building a skilled and inclusive society through Educational Technology requires an integrated approach that combines digital access, inclusive policy, and human capacity development. Nigeria possesses the foundational policies, entrepreneurial energy, and demographic advantage to lead Africa's EdTech revolution. By embedding technology into its education system and ensuring equitable participation, Nigeria can transform its youth bulge into a productive, globally competitive workforce.

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